ELECTRONIC INNOVATIONS IN ACTION

TUBES

—PRODUCT INFORMATION—

12HL7

Sharp-Cutoff Pentode

FOR TV VIDEO AMPLIFIER APPLICATIONS

• COLOR TV TYPE • FRAME-GRID CONSTRUCTION • 9-PIN MINIATURE • 21000 MICROMHOS

The 12HL7 is a miniature tube containing a frame-grid, sharp-cutoff pentode designed primarily for video amplifier service in color television receivers.

GENERAL

ELECTRICAL

Cathode - Coated Unipotential

Heater Characteristics and Ratings

	Parallel Sections, Series Circuit*	Parallel Sections, Parallel Circuit‡	Series Sections, Parallel Circuit§	
Heater Voltage, AC or DC	6.3¶	6.3±0.6#	12.6±1.2#	Volts
Heater Current	0.6±0.04#	0.6Δ	0.3¢	Amperes
Heater Warm-up Time, average**	11	---	---	Seconds

Direct Interelectrode Capacitances‡‡

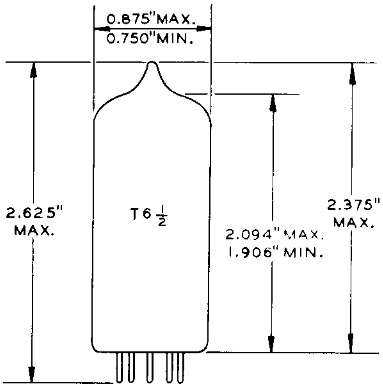
Grid-Number 1 to Plate: (g1 to p)	0.15	pf
Input: g1 to (h + k + g2 + g3 + i.s.)	15	pf
Output: p to (h + k + g2 + g3 + i.s.)	6.0	pf

MECHANICAL

Operating Position - Any
Envelope - T-6 1/2, Glass
Base - E9-1, Small Button 9-Pin
Outline Drawing - EIA 6-3

Maximum Diameter	0.875	Inches
Minimum Diameter	0.750	Inches
Maximum Over-all Length	2.625	Inches
Maximum Seated Height	2.375	Inches

PHYSICAL DIMENSIONS

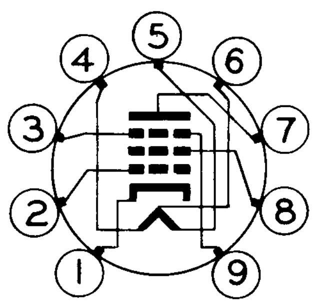


EIA 6-3

TERMINAL CONNECTIONS

Pin 1 - Cathode
Pin 2 - Grid Number 1
Pin 3 - Grid Number 3 (Suppressor) and Internal Shield
Pin 4 - Heater
Pin 5 - Heater
Pin 6 - Heater Center Tap
Pin 7 - Plate
Pin 8 - Grid Number 2 (Screen)
Pin 9 - Grid Number 3 (Suppressor) and Internal Shield

BASING DIAGRAM



EIA 9BF

GENERAL ELECTRIC

MAXIMUM RATINGS

DESIGN-MAXIMUM VALUES

Plate Voltage	400	Volts
Screen Supply Voltage	330	Volts
Screen Voltage - See Screen Rating Chart		
Positive DC Grid-Number 1 Voltage	0§§	Volts
Plate Dissipation	10	Watts
Screen Dissipation	1.0	Watts
Heater-Cathode Voltage		
Heater Positive with Respect to Cathode		
DC Component	100	Volts
Total DC and Peak	200	Volts
Heater Negative with Respect to Cathode		
Total DC and Peak	200	Volts
Grid-Number 1 Circuit Resistance		
With Fixed Bias	0.1	Megohms
With Cathode Bias	0.25	Megohms

Design-Maximum ratings are limiting values of operating and environmental conditions applicable to a bogey electron tube of a specified type as defined by its published data and should not be exceeded under the worst probable conditions.

The tube manufacturer chooses these values to provide acceptable serviceability of the tube, making allowance for the effects of changes in operating conditions due to variations in the characteristics of the tube under consideration.

The equipment manufacturer should design so that initially and throughout life no design-maximum value for the intended service is exceeded with a bogey tube under the worst probable operating conditions with respect to supply-voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation, environmental conditions, and variations in the characteristics of all other electron devices in the equipment.

CHARACTERISTICS AND TYPICAL OPERATION

AVERAGE CHARACTERISTICS

Plate Voltage	50	250	Volts
Screen Voltage	125	150	Volts
Grid-Number 1 Voltage	0¶¶	0	Volts
Cathode Resistor (Bypassed)	---	122	Ohms
Plate Resistance, approximate	---	55000	Ohms
Transconductance	---	21000	Micromhos
Plate Current	76	25	Milliamperes
Screen Current	32	6.0	Milliamperes
Grid-Number 1 Voltage, approximate			
Ib = 100 Microamperes	---	-7.2	Volts

NOTES

* Operated with the two sections of the heater connected in parallel and the resulting combination in series with the heaters of other tubes having the same bogey heater current.

‡ Operated with the two sections of the heater connected in parallel and the resulting combination in parallel with the heaters of other tubes having the same bogey heater voltage.

§ Operated with the two sections of the heater connected in series and the resulting combination in parallel with the heaters of other tubes having the same bogey heater voltage.

¶ Heater voltage for a bogey tube at If = 0.6 amperes.

\# For parallel heater operation, the equipment designer should design the equipment so that heater voltage is centered at the specified bogey value, with heater supply variations restricted to maintain heater voltage within the specified tolerance; for series heater operation, the equipment designer should design the equipment so that heater current is centered at the specified bogey value, with heater supply variations restricted to maintain heater current within the specified tolerance.

Δ Heater current of a bogey tube at Ef = 6.3 volts.

¢ Heater current of a bogey tube at Ef = 12.6 volts.

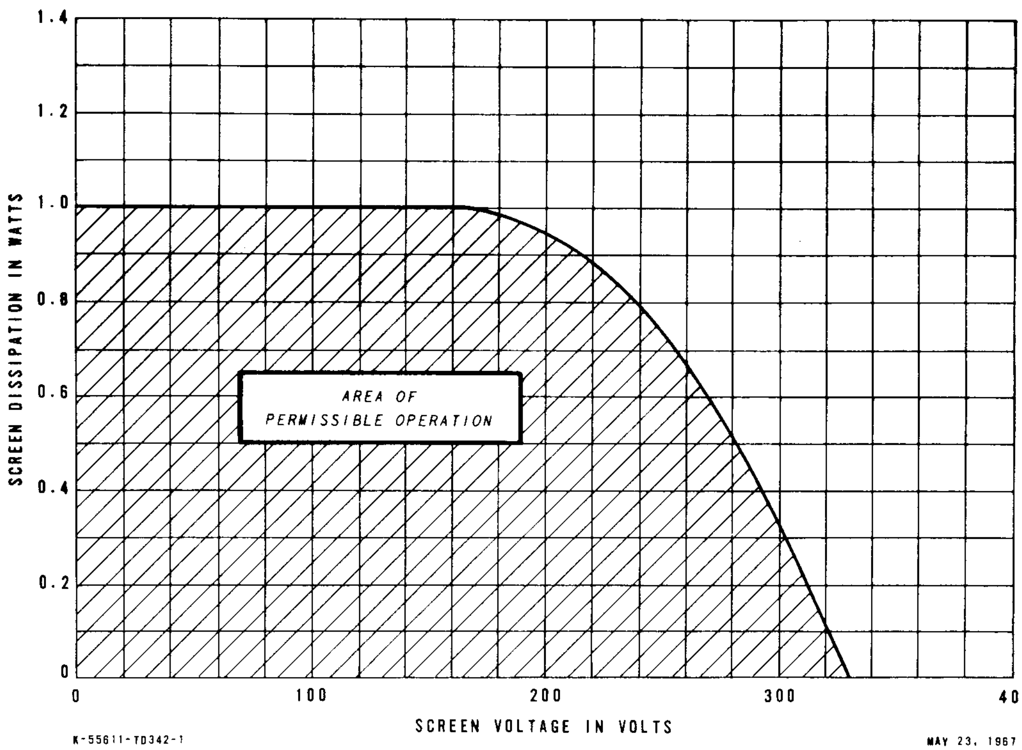
** The time required for the voltage across the heater to reach 80 percent of the bogey value after applying 4 times the bogey heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the bogey heater voltage divided by the bogey heater current.

‡‡ Without external shield.

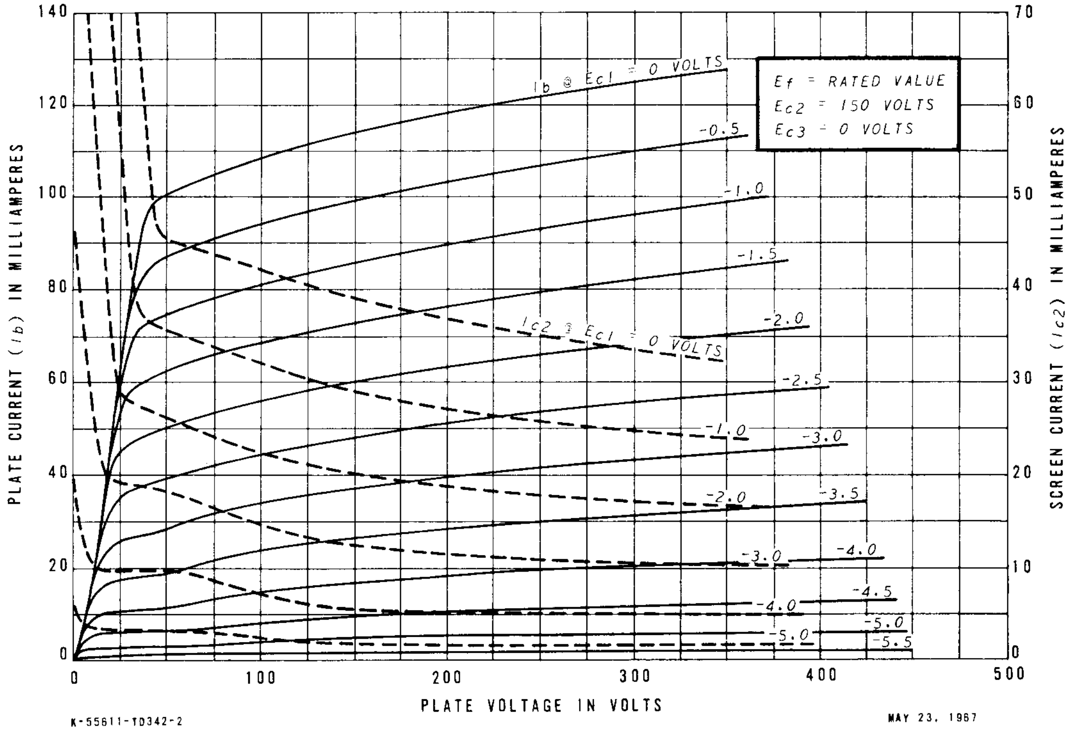
§§ Control grid to cathode spacing of this type is of such low order of magnitude as to preclude the use of voltage between these elements of more than 50 volts dc or peak ac in commercial tube checkers or shorts-indicating devices, particularly where mechanical excitation of the tube is employed.

¶¶ Applied for a short interval (two seconds maximum) so as not to damage tube.

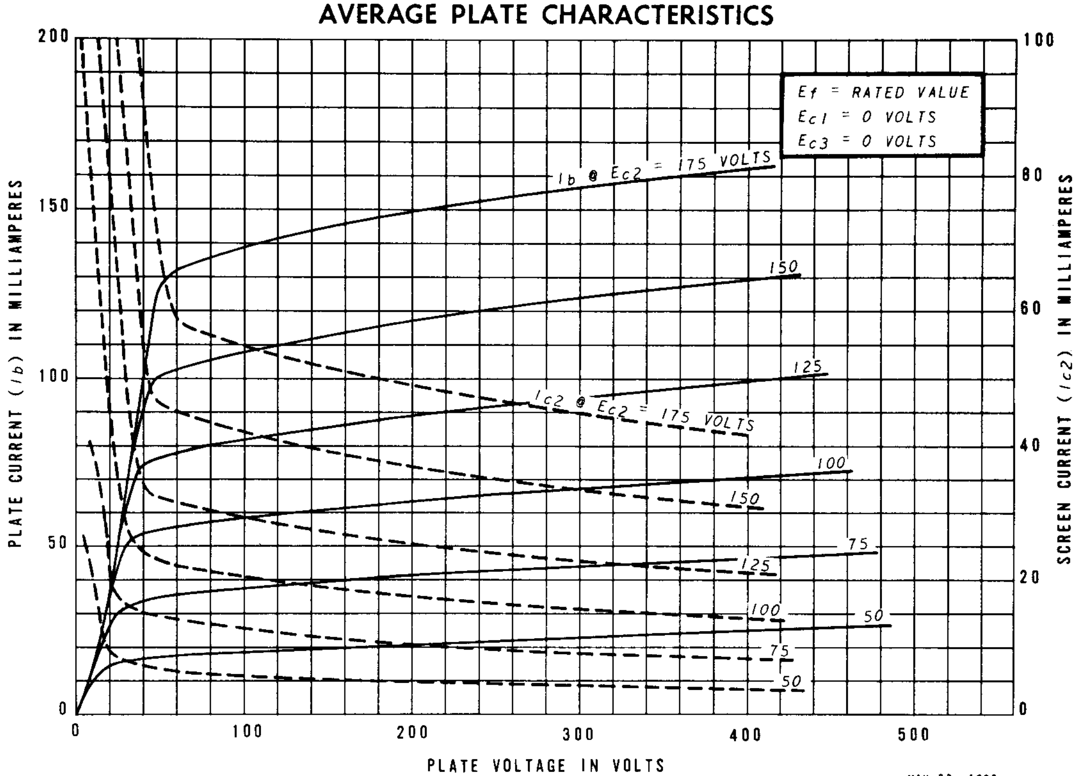
SCREEN RATING CHART



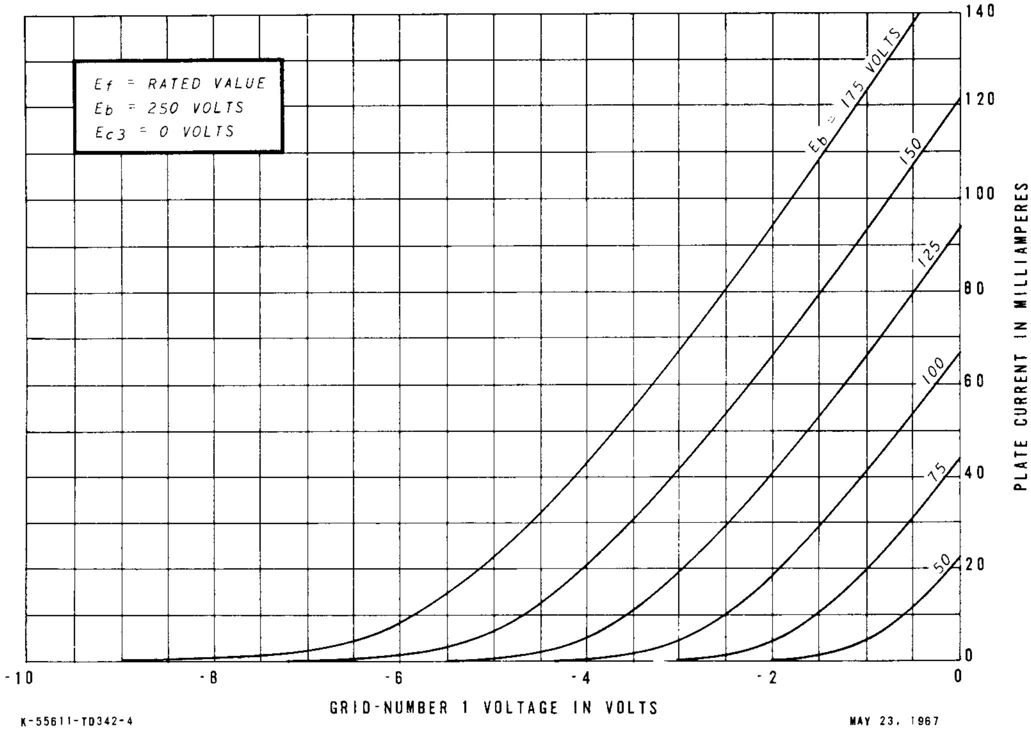
AVERAGE PLATE CHARACTERISTICS



AVERAGE PLATE CHARACTERISTICS



AVERAGE TRANSFER CHARACTERISTICS



AVERAGE TRANSFER CHARACTERISTICS

